

# ***MetroFuture:***

## ***Making a Greater Boston Region***

### ***Current Trends to 2030***

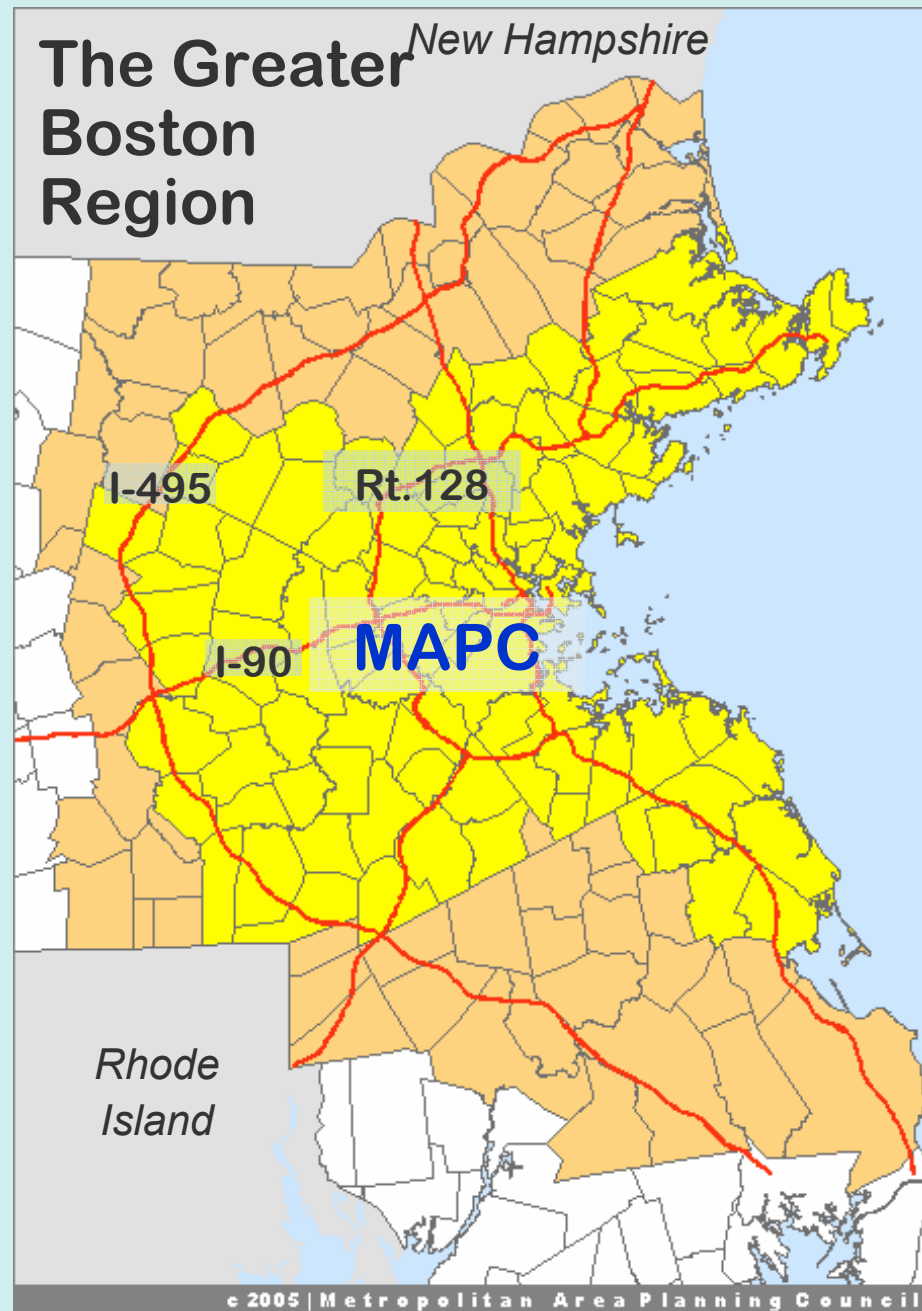


# The MetroFuture Model

- Integrated computer model of the region
  - .Population
  - .Land use
  - .Zoning
  - .Water supply
  - .Industry and employment
  - .Municipal finance
  - .Transit and highways
  - .Education
- Trends are linked to one another
- *Not a prediction* of the future, but  
*a projection* if current trends continue

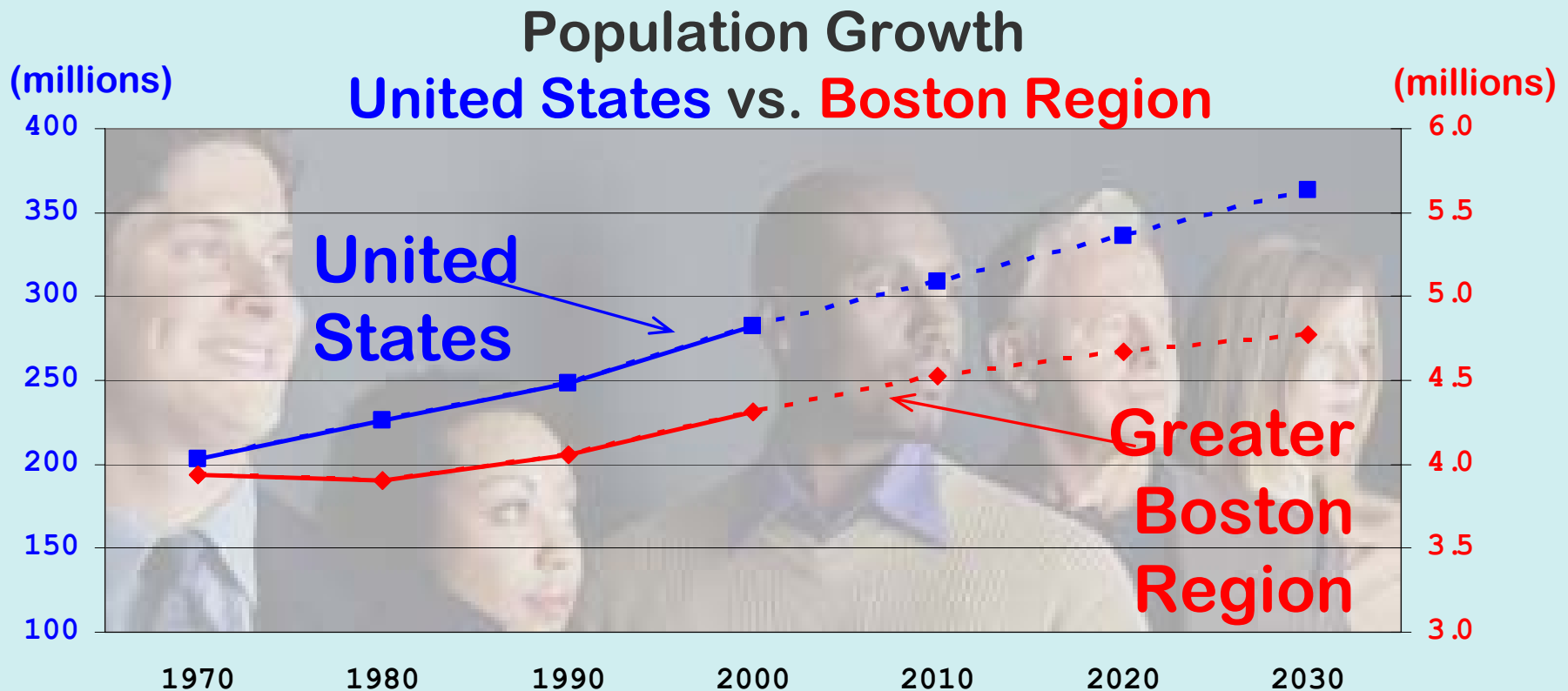
# Our Study Area

- **164 Communities**
  - 101 Communities in MAPC region
  - Plus 63 communities in larger transportation planning region
- **4.3 million people**
- **2.3 million jobs**
- **Diverse communities and people**



# Projected Population Growth

- **Greater Boston Region may grow 10.8 %**
- **United States may grow 28%**



# Inner Core and Regional Cities

*May grow faster than  
previous decades*

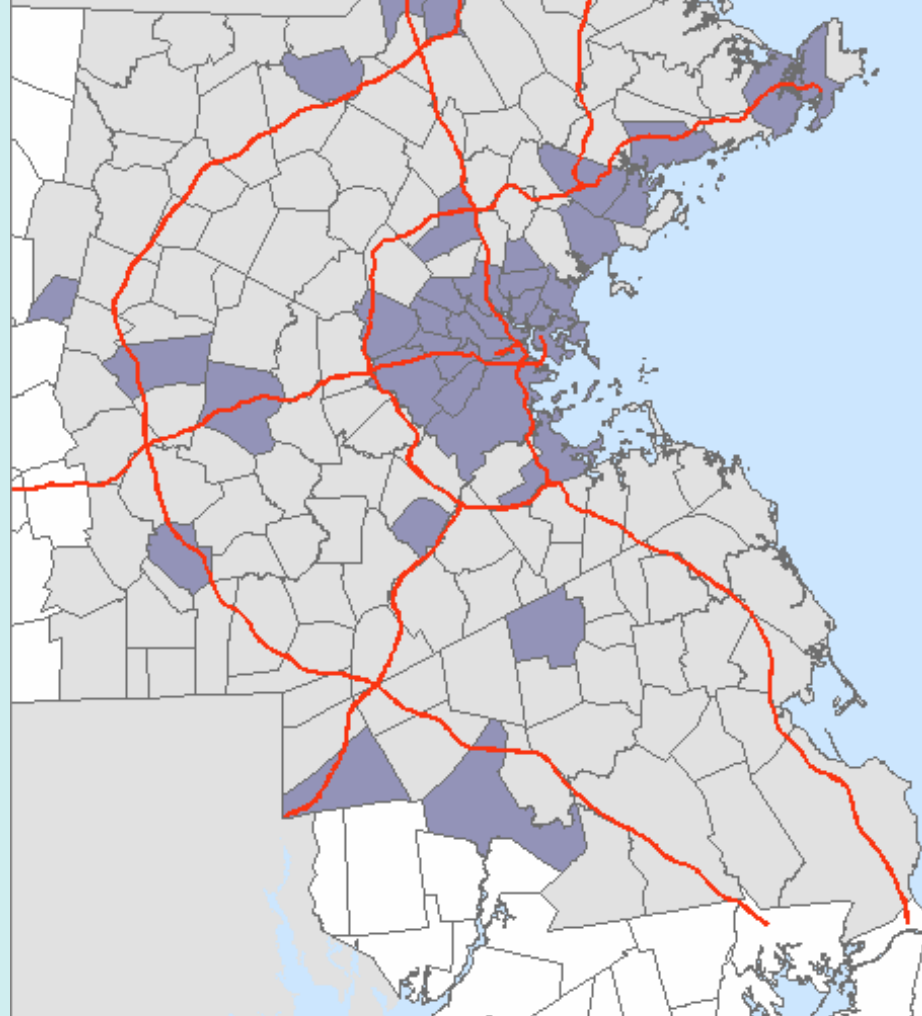
35% of region's total  
population increase

120,000 new housing units

2/3 of new housing may  
be apartments, condos

90% of new housing  
created through  
redevelopment

## Inner Core and Regional Cities



# Maturing Suburbs

*Continued moderate growth*

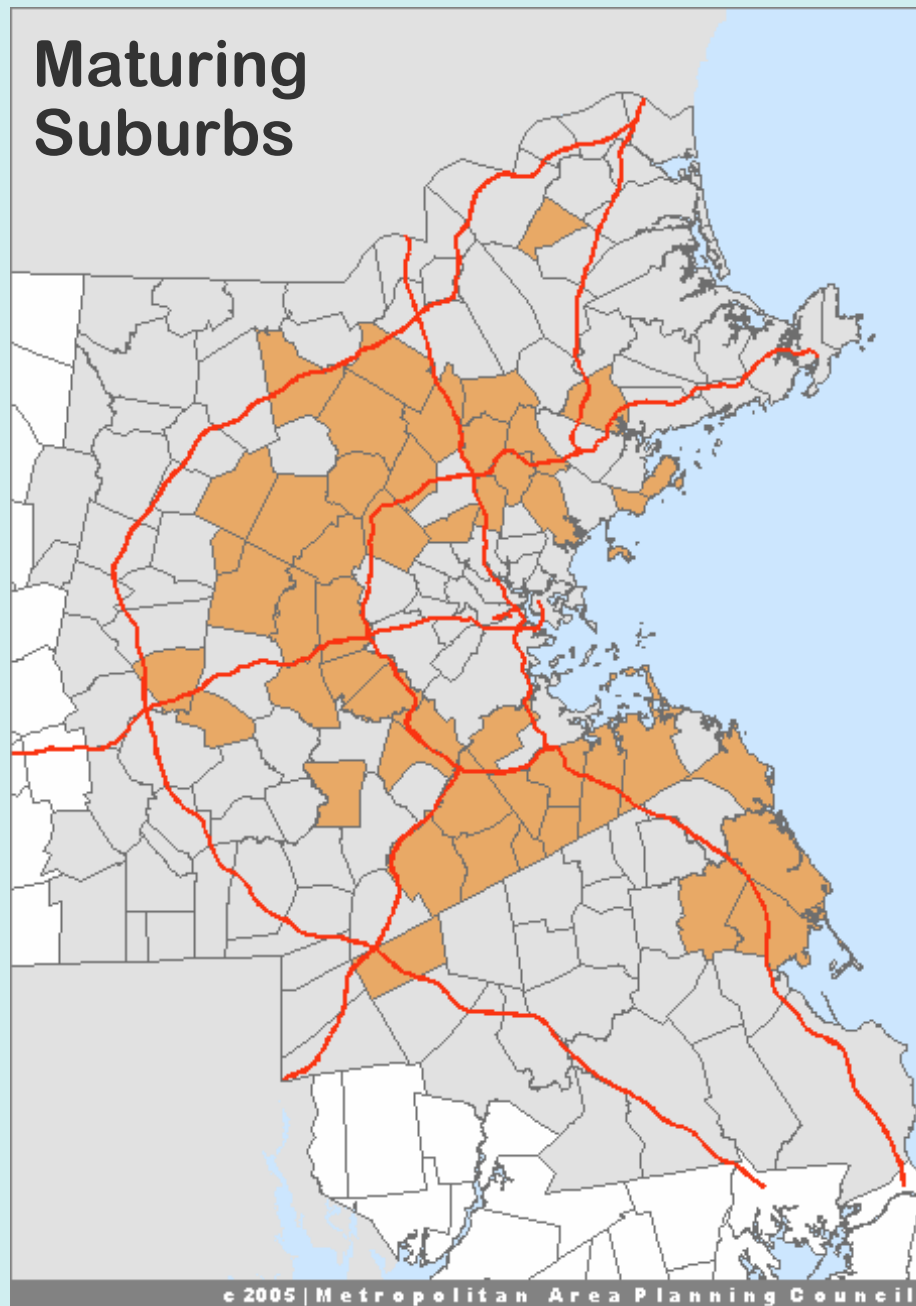
30% of region's total population increase

100,000 new housing units

Only 15% of land is vacant and developable

Cannot produce enough housing under current zoning—shortfall of 25,000 units

## Maturing Suburbs

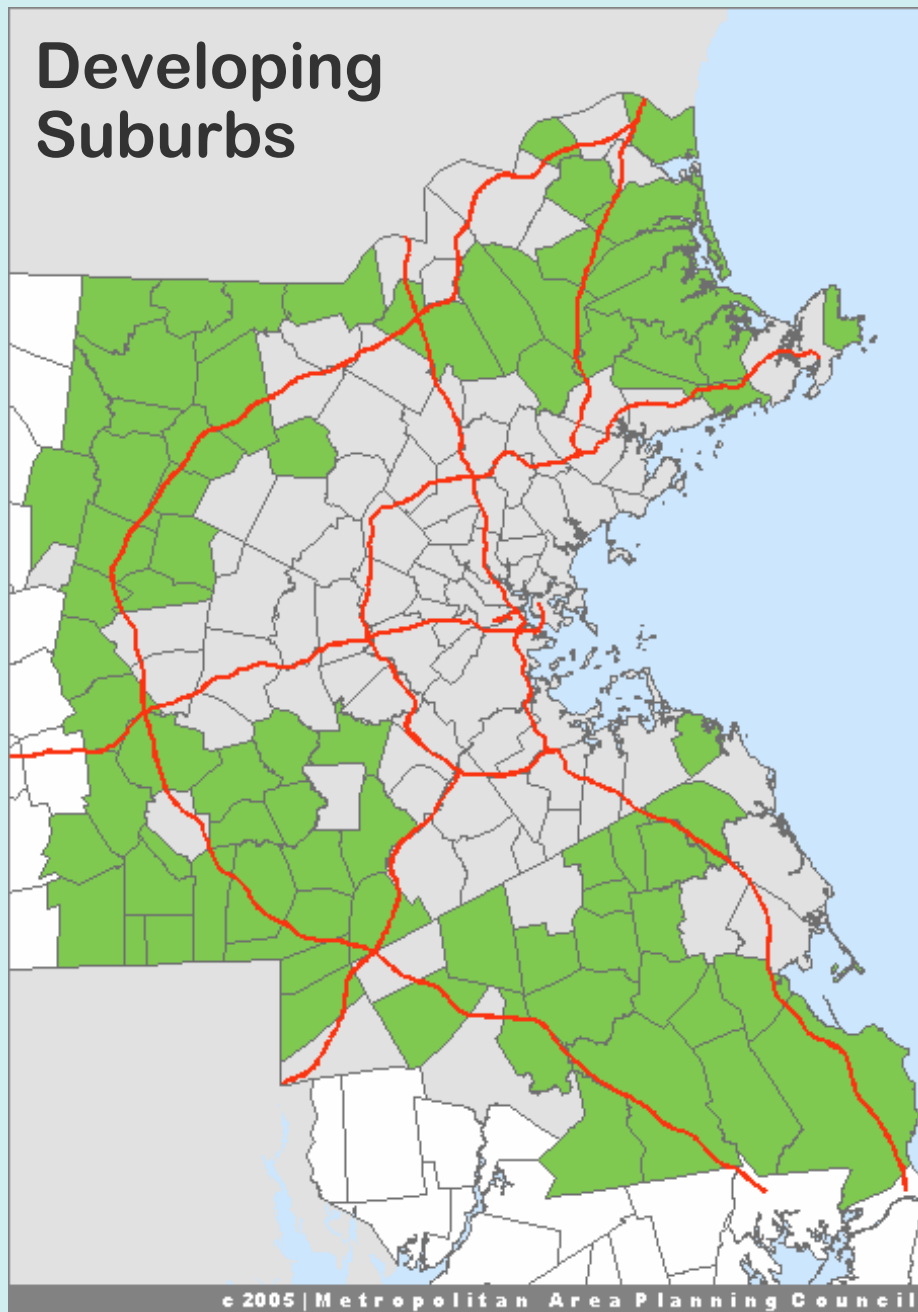


# Developing Suburbs

*May grow more slowly than  
recent decades*

35% of region's total  
population increase  
86,000 new housing units  
85% single family homes  
Mostly one-acre zoning  
Low-density subdivisions  
result in 85,000 acres of  
open space lost

## Developing Suburbs

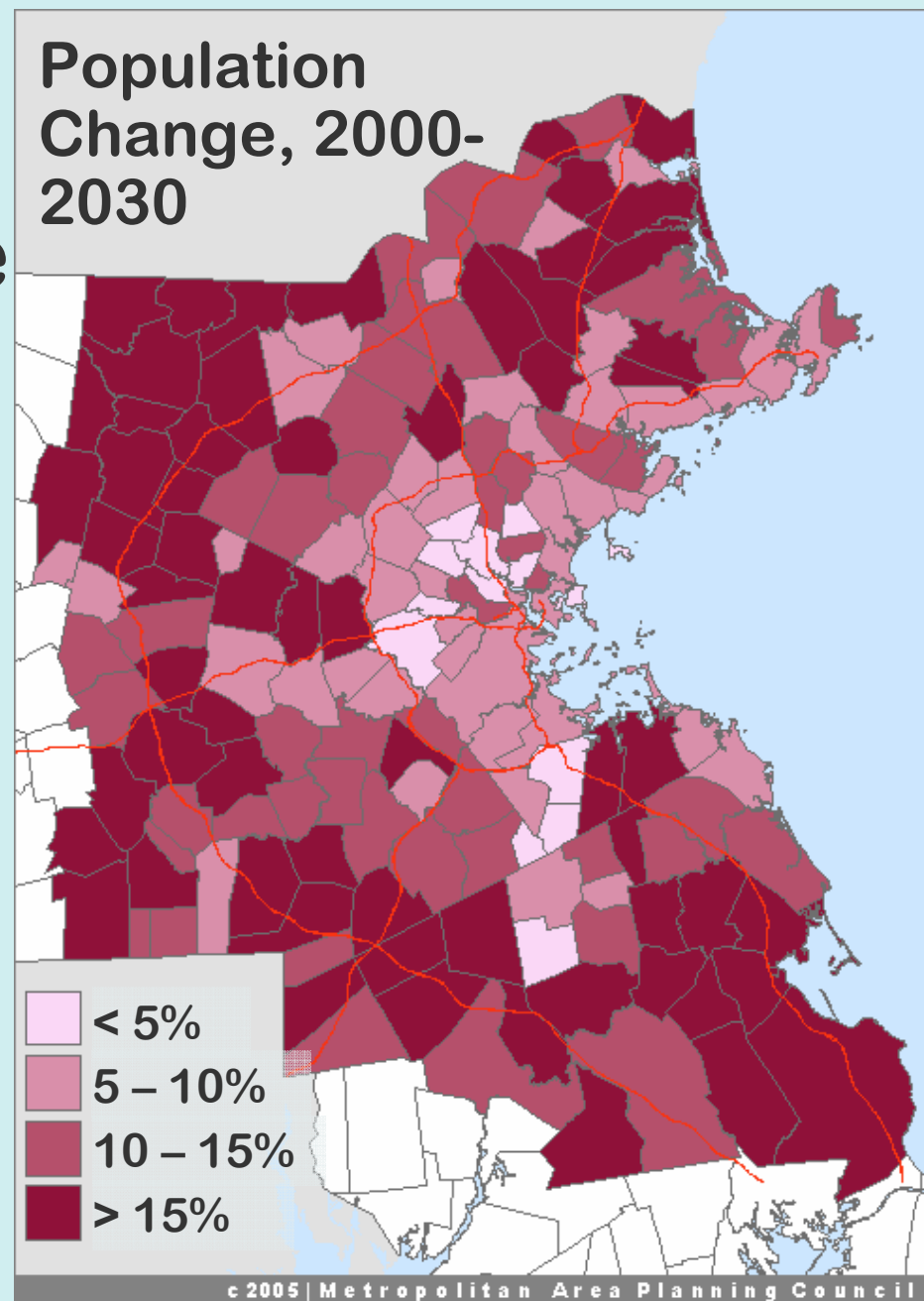




# Population Change

Largest gainers may be  
urban centers and  
some suburbs

Highest growth rates  
will be in Developing  
Suburbs





# Job Growth

Increase of  
230,000 jobs,  
~10% growth

Four major job  
centers may  
account for  
half of new  
jobs

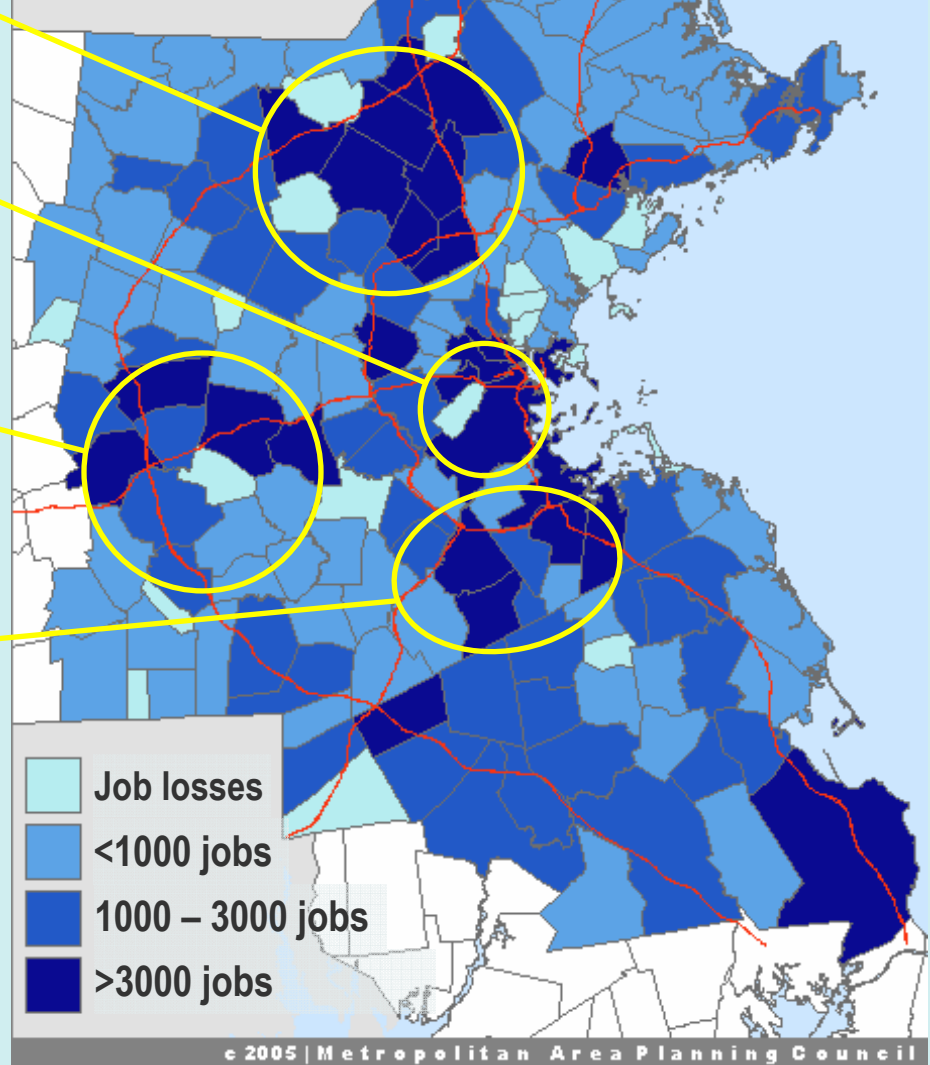
I-93 North  
37,000 jobs

Metro Core  
50,000 jobs

MetroWest  
22,000 jobs

128 South  
29,000 jobs

## Employment Gains, 2000 – 2030



## Changing Economy

### Large job gains:

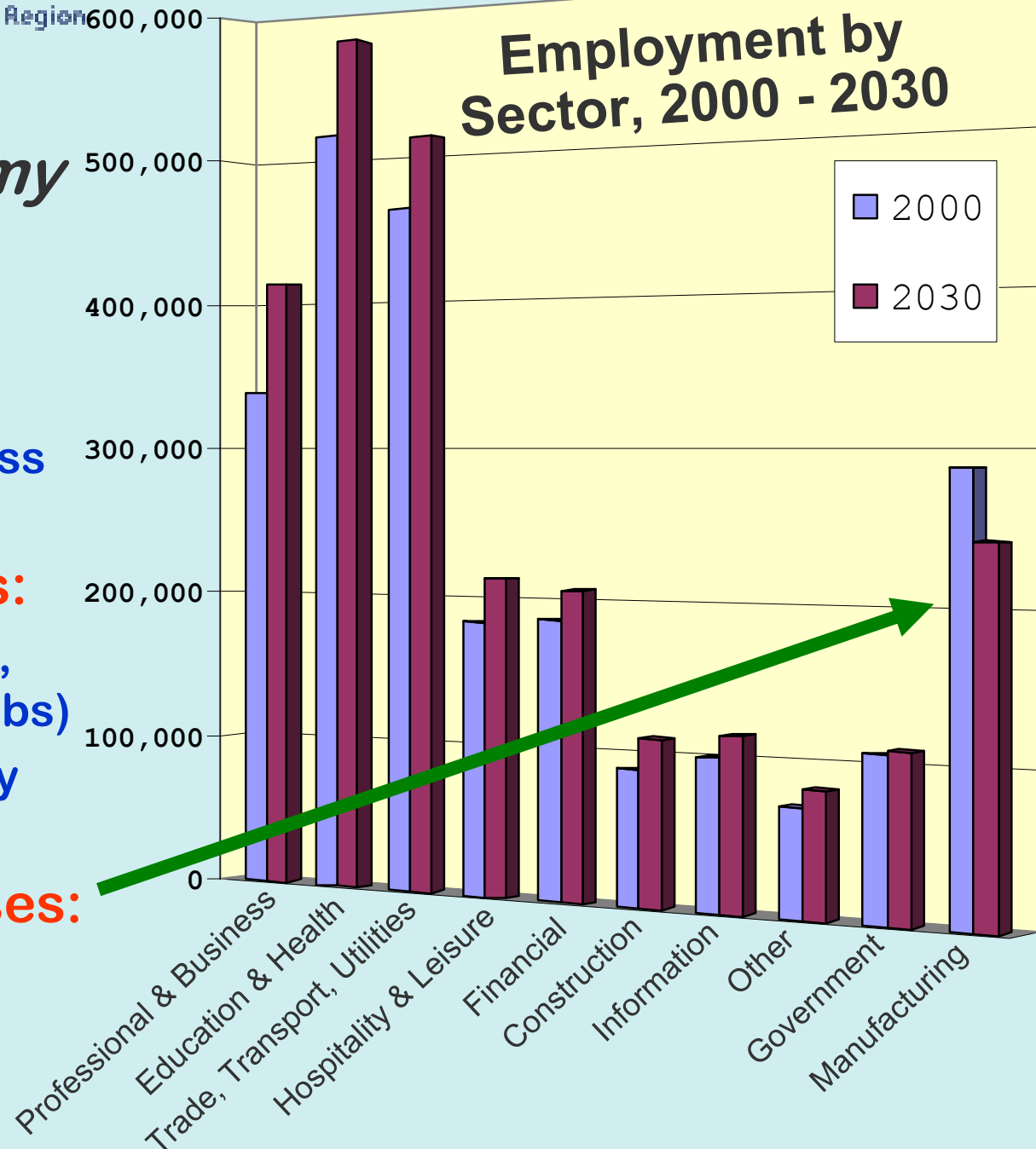
- Education and Health (65,000 jobs)
- Professional & Business Services (75,000 jobs)

### Moderate job gains:

- Trade, Transportation, and Utilities (48,000 jobs)
- Leisure and Hospitality (29,000 jobs)

### Significant job losses:

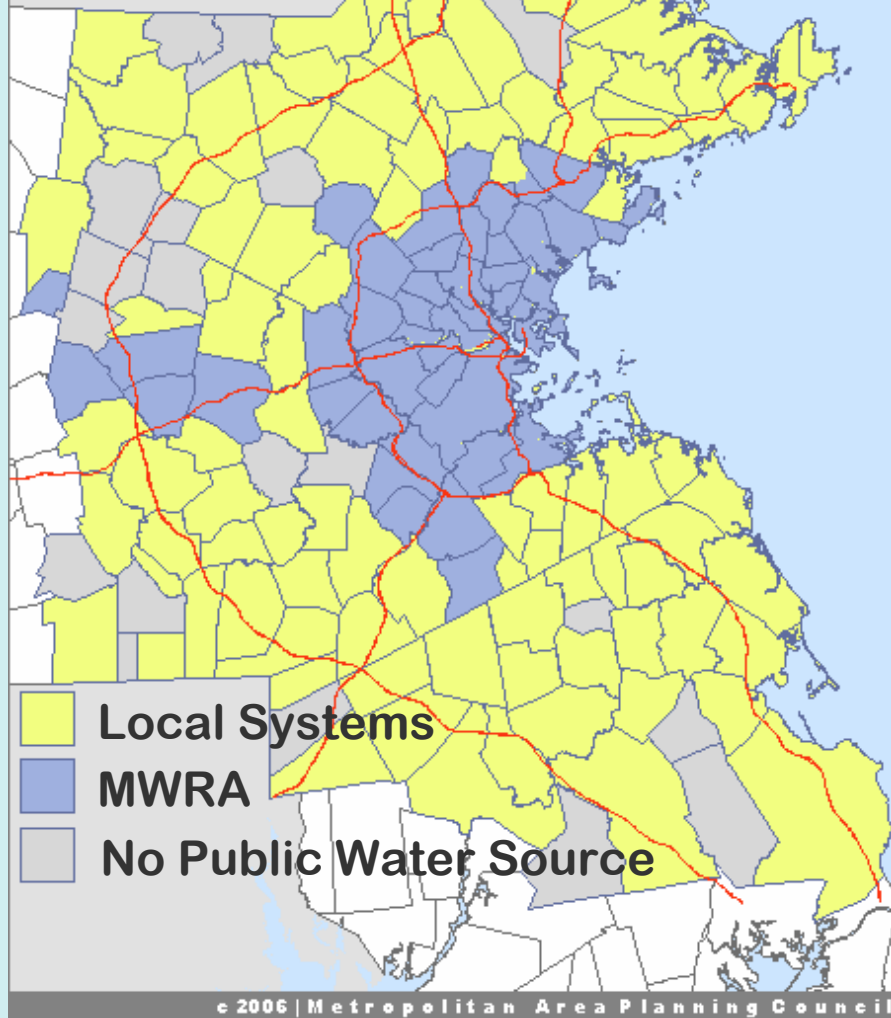
- Manufacturing (loss of 46,000 jobs)



# The Region's Water Supply

- 44 cities and towns served by MWRA
- 104 communities with local water systems
- 20 towns rely on private wells or neighboring towns (no public water source)

## Sources of Water Supply in the Region



# MetroFuture Water Demand Projections-Baseline

## Disaggregated demand model:

1. Existing “baseline” demand for 2000 (5 year average)

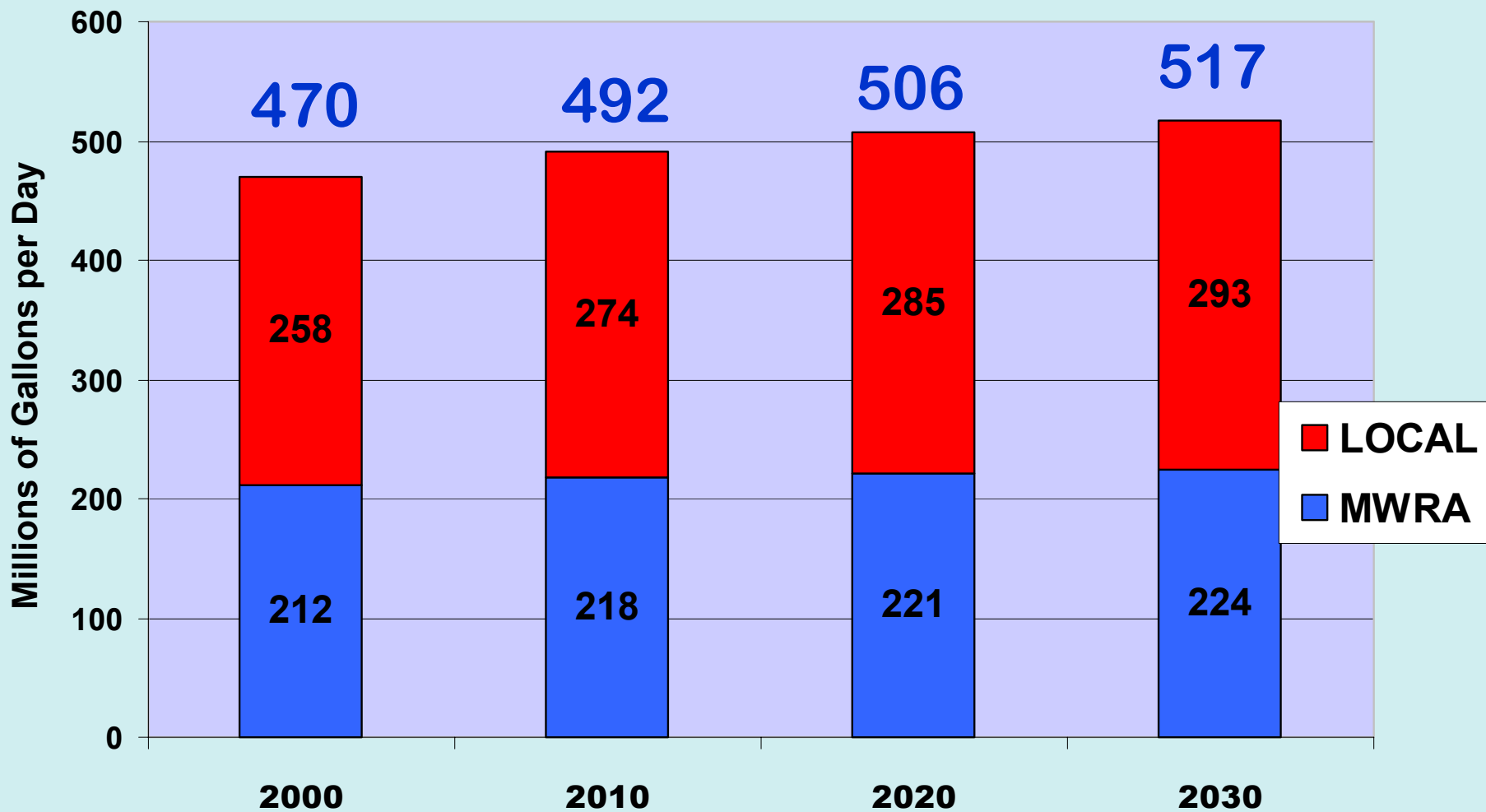
+

2. Projected future demand based on existing trends for 2010, 2020, & 2030 in 3 water use categories:

- **Residential** (population x per-capita factor, 75 gpcd)
- **Commercial / Industrial** (3 sub-categories)  
(employment projections x per-employee water use factors)
- **Unaccounted-for-water** (regional average 15%)

> Projected demand compared to Water Management Act withdrawal limits (registration plus permit, if any)

## MetroFuture Projected Water Demand, 2000-2030



## **MetroFuture Baseline Water Demand Projections**

### **Summary of changes from 2000 to 2030**

#### **Demand on local sources (104 communities):**

2000: 258 mgd

**Increase: 35 mgd, or 13.5%**

2030: 293 mgd

#### **Demand on MWRA sources (44 communities):**

2000: 212 mgd

**Increase: 12 mgd, or 6.5%**

2030: 224 mgd

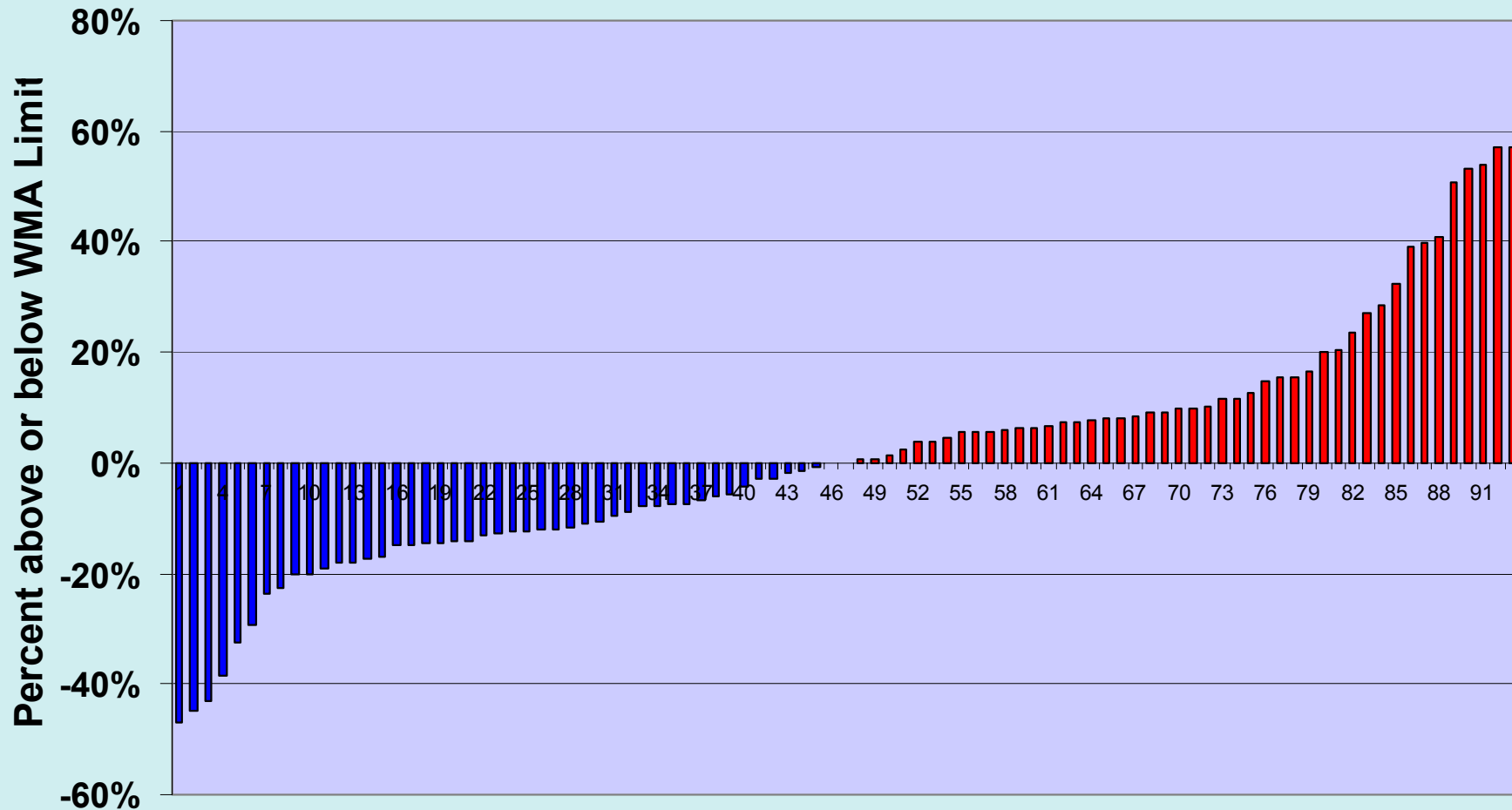
#### **Total for the region (140 communities):**

2000: 470 mgd

**Increase: 47 mgd, or 10%**

2030: 517 mgd

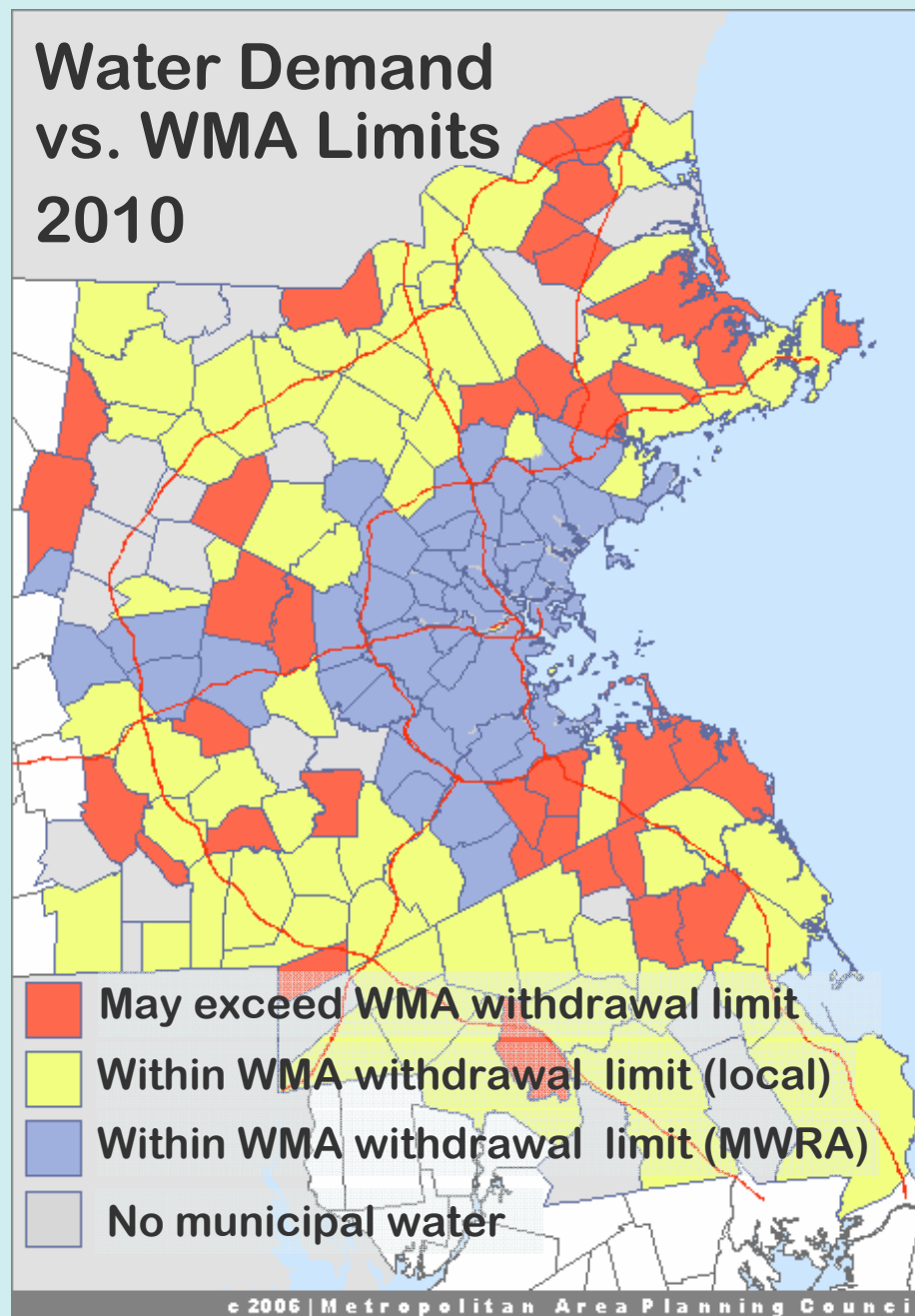
## 2030 Water Demand VS. WMA Limit (%)





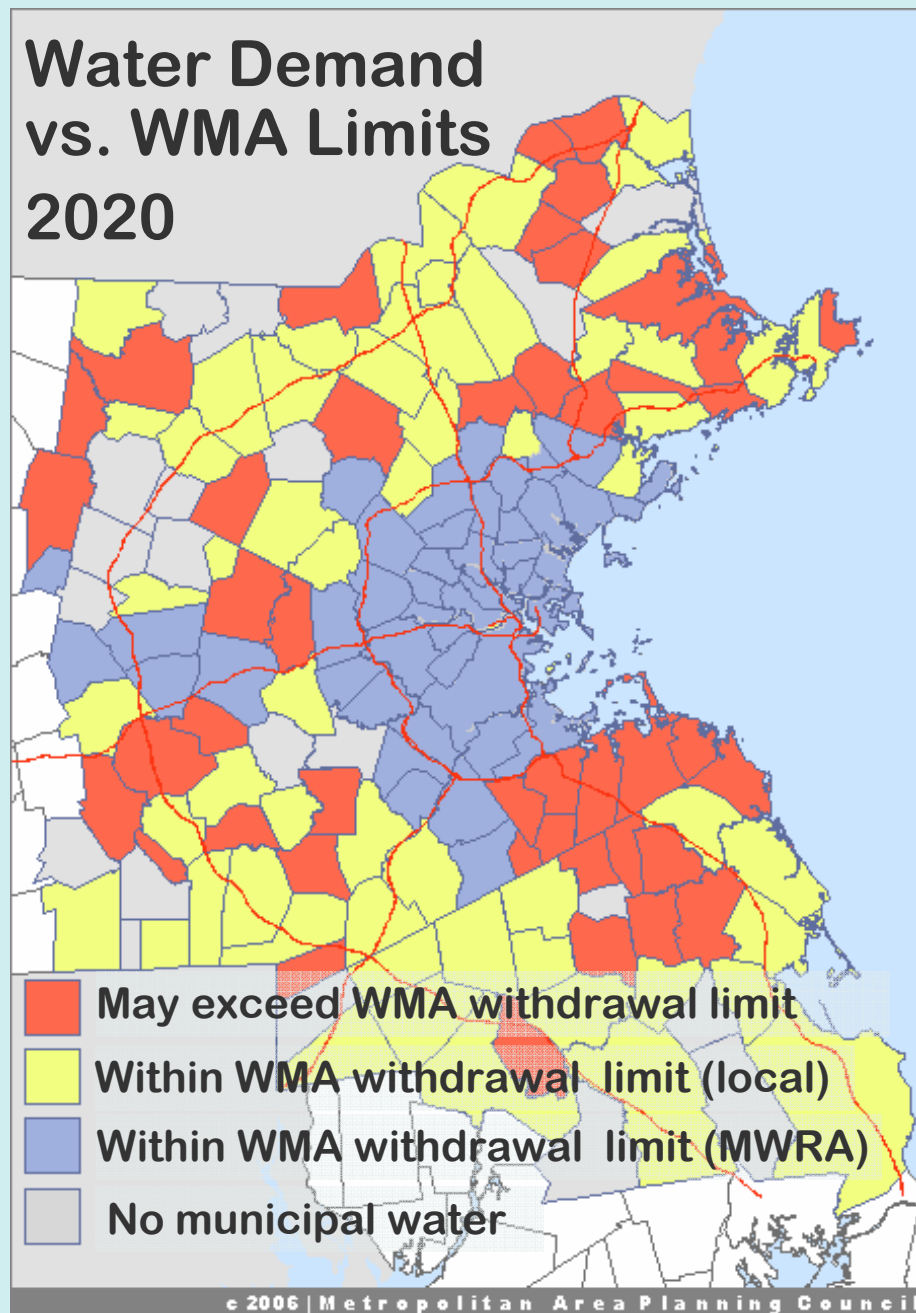
# 2010 Baseline Water Demand Projections

In 2010, 37 communities  
may exceed existing  
Water Management  
Act withdrawal limits



# 2020 Baseline Water Demand Projections

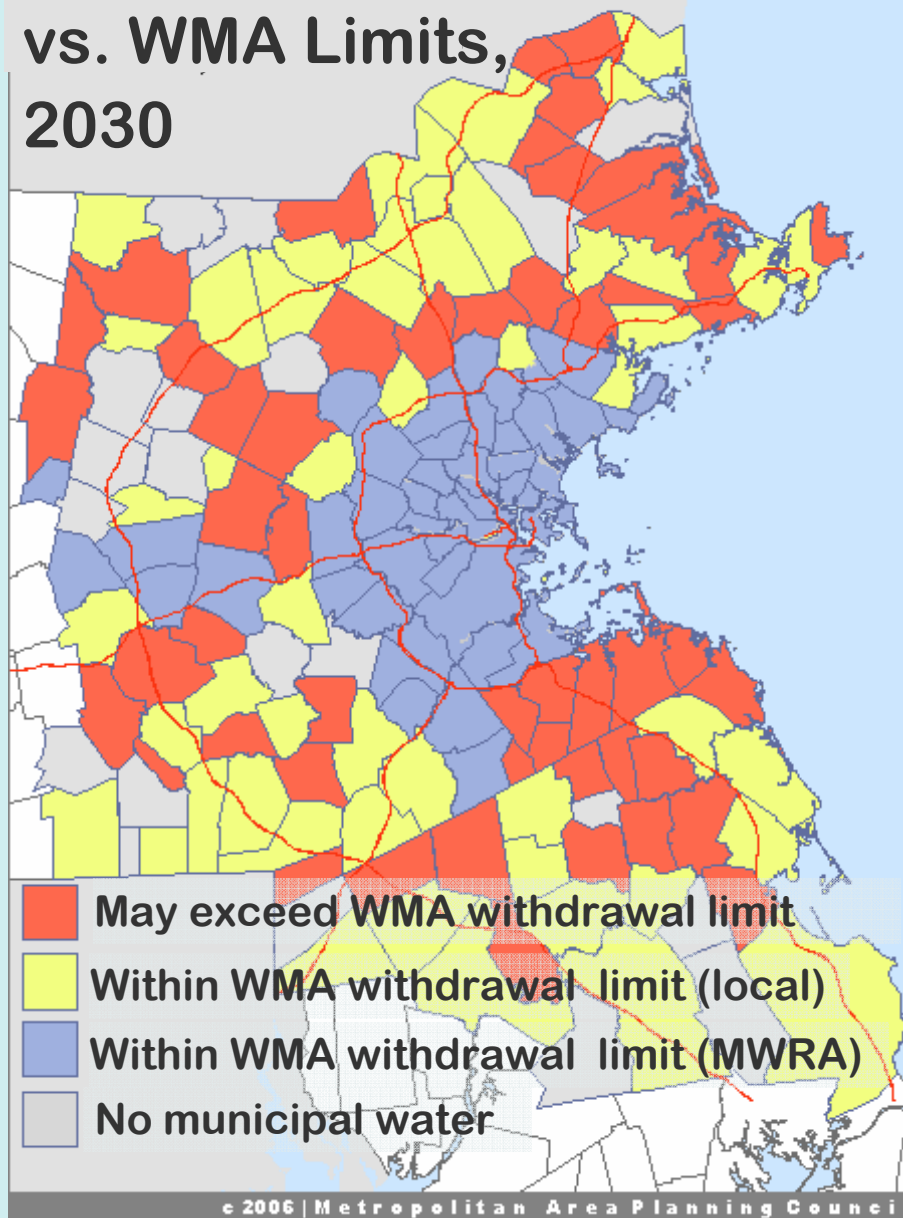
In 2020, 44 communities  
may exceed existing  
Water Management  
Act withdrawal limits



# 2030 Baseline Water Demand Projections

In 2030, 50 communities  
may exceed existing  
Water Management  
Act withdrawal limits

## Water Demand vs. WMA Limits, 2030

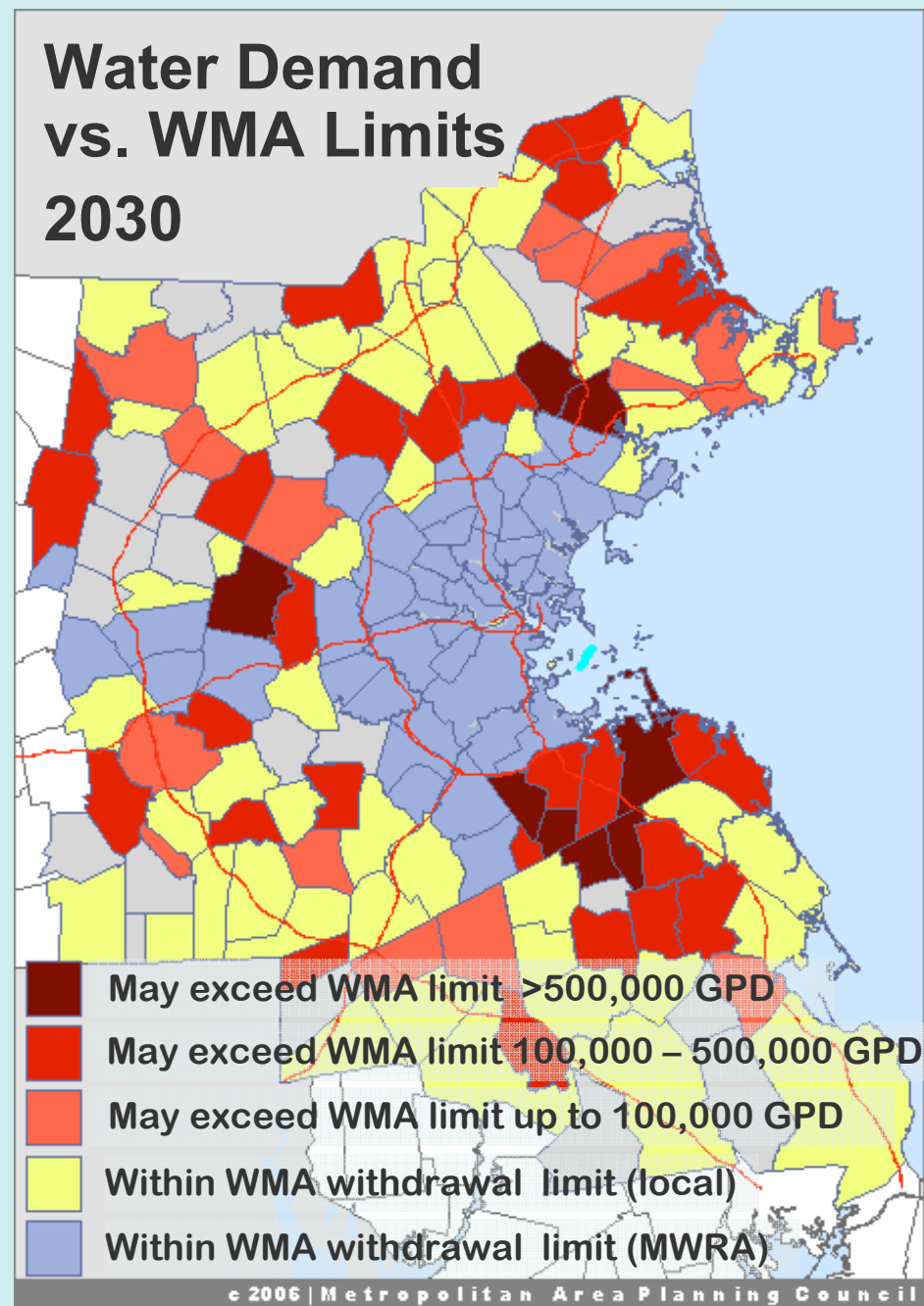


# 2030 Baseline Water Demand Projections

52 communities may exceed  
their existing Water  
Management Act  
withdrawal limits

36 may exceed these limits  
by more than 100,000 gpd

9 may exceed these limits  
by more than 500,000 gpd



# A Projection is Not a Destiny

*We can change many of these trends...*

- State water policy
- Local residential water conservation
- Industrial/commercial water use efficiency
- Peak seasonal demand reduction
- Water Reuse/Recycling
- Low Impact Development / Stormwater Recharge
- Alternative / decentralized wastewater treatment
- Public Education

## MetroFuture Water Demand Projection-Scenario 2

Existing “baseline” demand for 2000 *reduced 10%*



- *Alternative projected demand for 2010, 2020, 2030 in 3 water use categories:*
  - **Residential** 65 gpcd (instead of 75 gpcd)
  - **Commercial / Industrial** Reduced by 10%
  - **Unaccounted-for-water** 10% (instead of 15%)

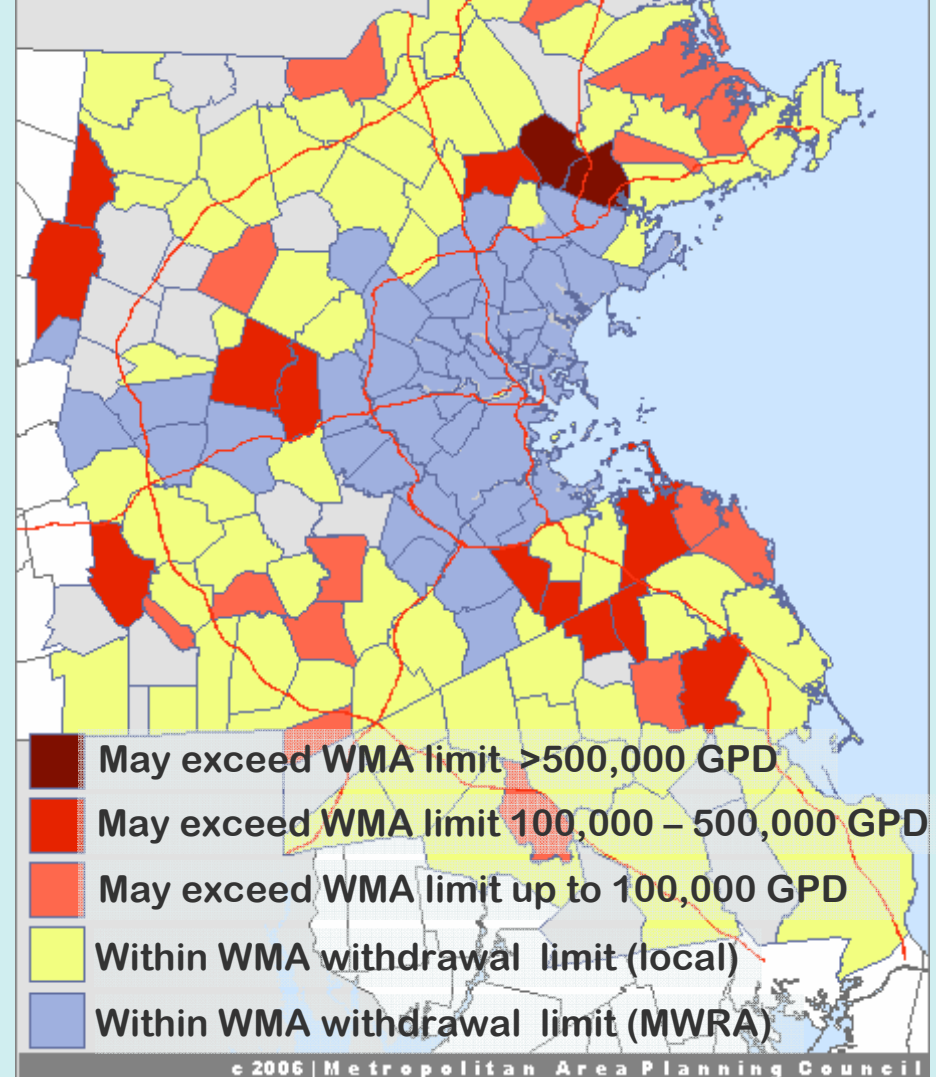
## “Scenario 2” 2030 Projected Water Demand

33 communities may exceed  
existing Water Management  
Act limits (*reduced from 52*)

16 may exceed these limits by  
more than 100,000 gallons a  
day (*reduced from 36*)

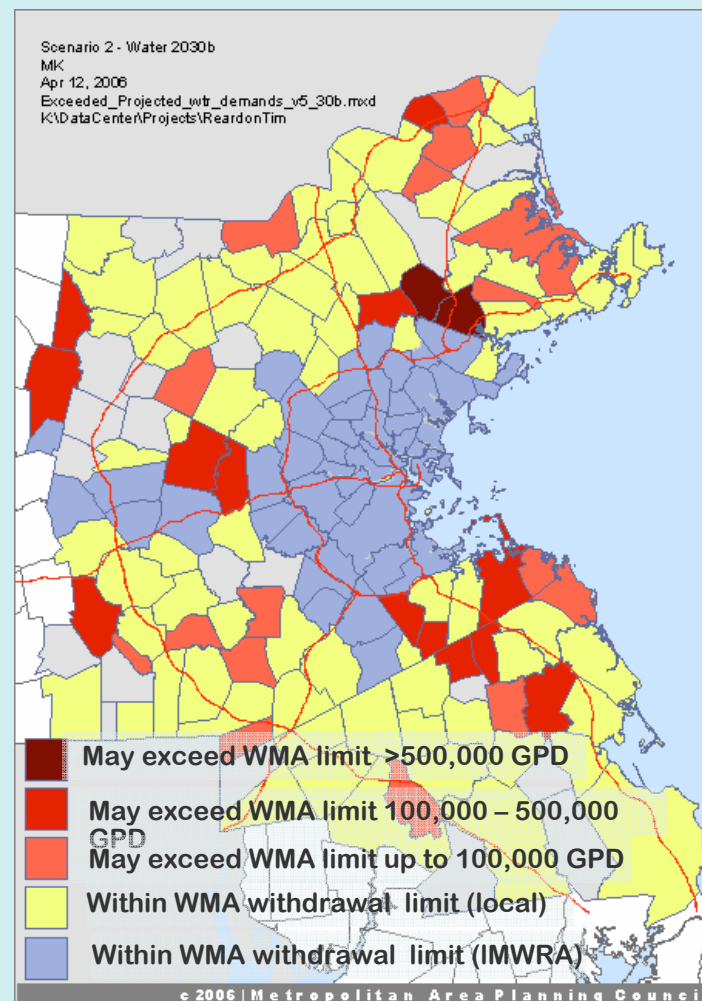
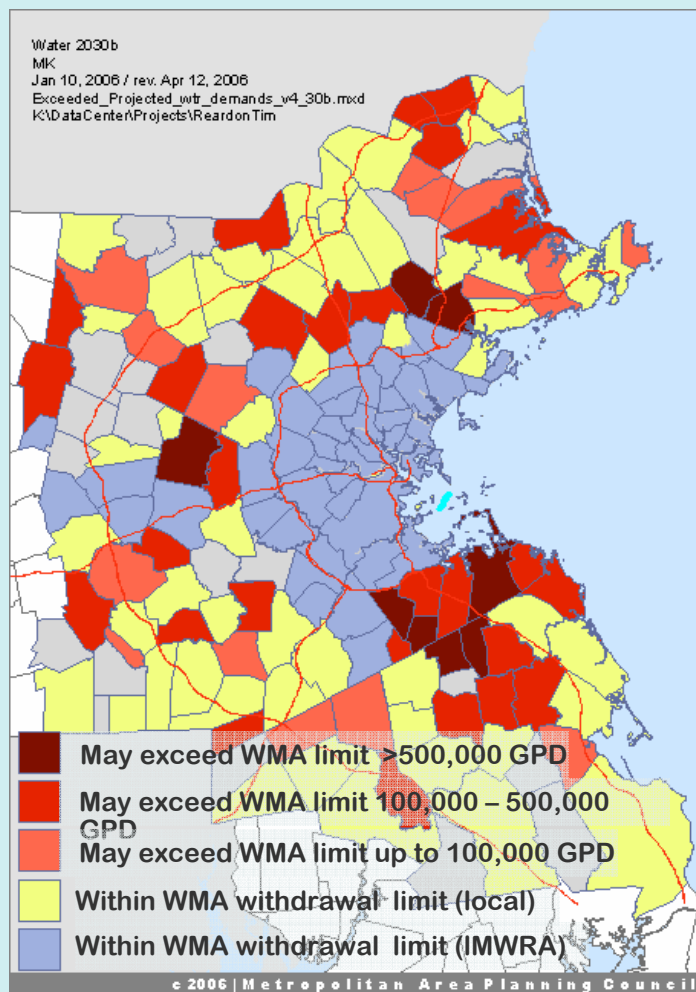
2 may exceed these limits by  
more than 100,000 gallons a  
day (*reduced from 9*)

### Water Demand vs. WMA Limits 2030

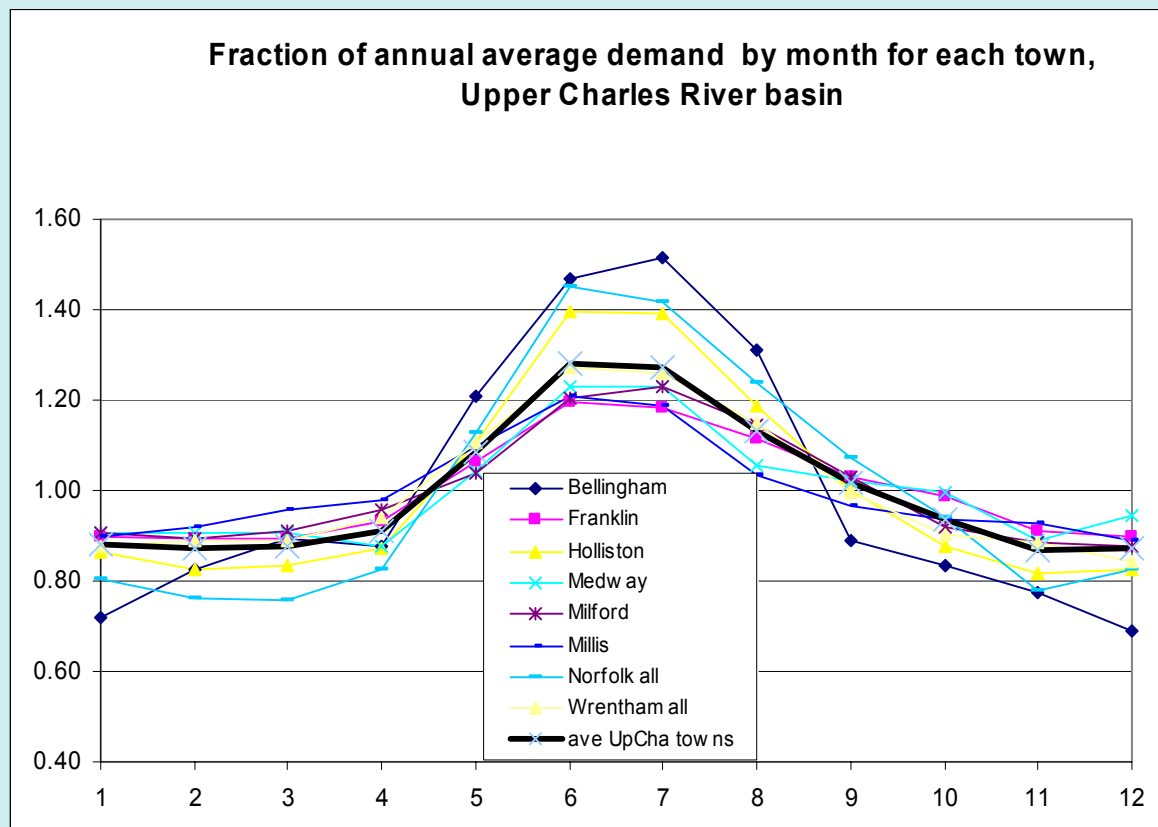




# 2030 Baseline Projection vs. “Scenario 2”



# SEASONAL PEAK WATER DEMAND

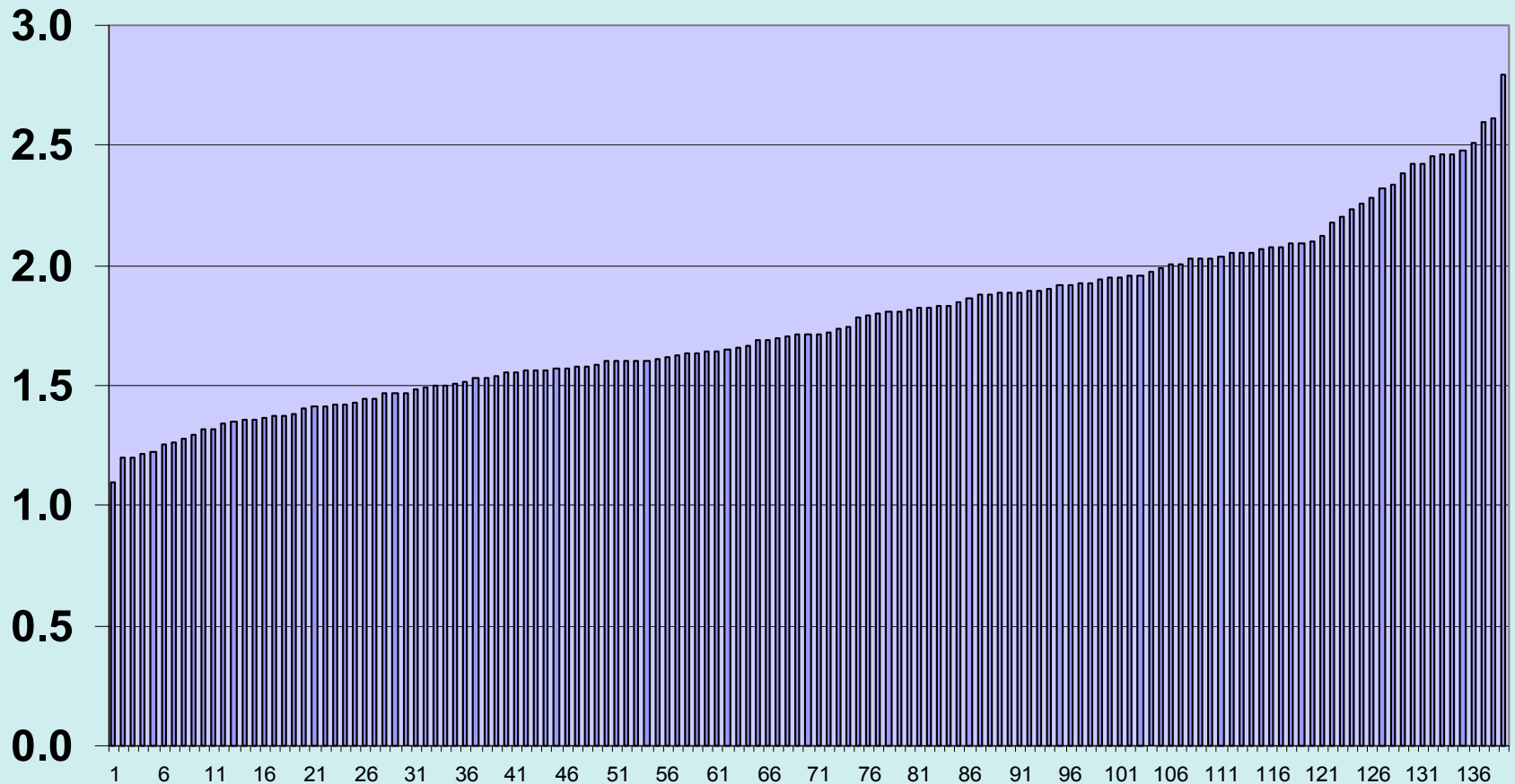


DRAFT—SUBJECT TO CHANGE

- Determined a “monthly factor” from historical records of monthly water-supply rates in the model calibration periods (10 years)
- Monthly Factor represents the fraction that total monthly demand differed from the annual average demand by town

# SEASONAL PEAK WATER DEMAND

## Average Day to Maximum Day Ratios



# ***MetroFuture:***

## ***Making a Greater Boston Region***

**[www.metrofuture.org](http://www.metrofuture.org)**





## MetroFuture: Making a Greater Boston Region



## MetroFuture: Making a Greater Boston Region

# Limited Local Water Supplies

22 water systems  
currently exceed  
Water Management  
Act withdrawal limits  
(registration + permit)

## Water Demand vs. WMA Limits 2000

